REMARKS

Claims 45-55, 57, 59, 66-73, 82-84, and 86 are pending in the present application. The Office Action and cited references have been considered. Favorable reconsideration is respectfully requested. The remarks submitted in Applicant's prior responses are incorporated by reference herein. Applicant further submits that the claims are patentable for the reasons set forth below.

Finality of Rejection

Applicant notes that the finality of the Office Action mailed on October 23, 2008, was withdrawn and the new office action issued on January 28, 2009. Applicant thanks the Examiner for his cooperation. Applicant notes, however, that the pargarph 8 on page 14 of the Action indicating that the rejection was made final remained in the newly issued Action. Correction of the record is respectfully requested.

35 U.S.C. § 102

Claims 45-47, 53, 55, 57, 66, 72, 82-83, and 86 were rejected under 35 U.S.C. § 102(b) as being anticipated by Barnsley (U.S. Patent No. 5,488,501). This rejection is respectfully traversed.

Claim 45 recites in a telecommunication system, a method for routing optical data signals using a first communication path comprising at least one optical fiber extending between at least two network elements of the telecommunication system for carrying optical data signals separated from their associated optical addressing signals, and a second communication path comprising one or more optical fibers extending between at least two network elements of the telecommunication system for carrying optical addressing signals separated from

their associated optical data signals, each of said at least two network elements having routing capabilities. The method comprises the steps of providing a combination of the optical addressing signals to provide addressing information required for establishing an address for routing the optical data signals, and providing at least one of the at least one optical fiber comprised in the first communication path for carrying the optical data signals separated from their associated optical addressing signals is different from any of the one or more optical fibers comprised in the second communication path. The optical data signals conveyed separately from their associated optical addressing signals along the at least one optical fiber were generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities. This is not taught, disclosed or made obvious by the prior art of record.

Additionally, claim 46 recites in a telecommunication system, a method for routing optical data signals between at least two routers in the system. The method includes generating first optical addressing signals associated with the optical data signals by converting signals identifying a destination address into corresponding optical addressing signals, transmitting the optical addressing signals over one or more optical addressing links from one of the at least two routers to another router of the at least two routers, and transmitting the optical addressing signals separated from their associated optical data signals over one or more optical fibers comprised in a first communication path, the first communication path extending from one of the at least two routers to another router, each of said at least two routers having routing capabilities, and concurrently or subsequently transmitting the optical data signals separated from their associated optical

addressing signals to the another router via a second communication path comprising at least one optical fiber. The second communication path extends from said one router of the at least two routers to the another router, and comprises at least one optical fiber which is different from any of the at least one optical fibers comprised in the first communication path. The optical data signals being conveyed separately from their associated optical addressing signals were generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities.

Claims 45 and 46 are used as examples. The other independent claims also recite, in different ways, that there are different optical fibers for carrying optical data signals separate from their associated optical addressing signals and optical fibers for carrying the optical addressing signals separate from their associated optical data signals, and that the various claimed network elements and/or routers have routing capabilities.

For example, claim 66 recites " means for transmitting said optical addressing signals from said routing apparatus to a second router over a first communication path comprising at least one optical fiber for carrying said optical addressing signals separated from their associated optical data signals, each of said routing apparatus and said second router having routing capabilities, and means for transmitting said optical data signals from said routing apparatus to said second router along a second communication path comprising at least one optical fiber, said at least one optical fiber for carrying said optical data signals separated from their associated optical addressing signals and wherein said at least one optical fiber for carrying said optical data signals separated from their associated optical addressing

signals is different from any of the at least one optical fibers comprised in said first communication path, and wherein said optical data signals being conveyed separately from their associated optical addressing signals, were generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities." Claim 82 recites "transmission means for transmitting said optical addressing signals separated from their associated optical data signals over a first communication path comprising one or more optical fibers and extending between the at least two network elements towards said destination address, each of said at least two network elements having routing capabilities," and "transmission means for transmitting said optical data signals towards said destination address a second communication path comprising at least one optical fiber extending between the at least two network elements for conveying said optical data signals separated from their associated optical addressing signals, wherein at least one of said at least one optical fiber in said second communication path is different than any of the at least one optical fibers comprised in the second communication path, and wherein said optical data signals being conveyed separately from their associated optical addressing signals, were generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities." Finally, claim 86 recites "transmission means for transmitting the second optical addressing signals separated from associated optical data signals over one or more optical fibers extending from said telecommunication routing apparatus towards the destination address representing a second network element, said telecommunication routing apparatus and said second network element each having routing capabilities," "receiving means for receiving

optical data signals generated at a plurality of different network elements, each of said plurality of different network elements having routing capabilities," and " transmission means for transmitting the optical data signals received towards the destination address along an optical path extending from the telecommunication routing apparatus toward the second network element which comprises at least one optical fiber that is different from any one of said one or more optical fibers over which the second optical addressing signals separated from their associated optical data signals are transmitted."

These features, in combination as recited in the claims, are not taught, disclosed or made obvious by the prior art of record.

Applicant is submitting herewith a declaration by Dr. Uri Mahlab, the named inventor in the present application. Dr. Mahlab has been employed by ECI since August 1998, as a leader of the optical research activity and has held a position as a senior lecturer at the Holon Institute of Technology, Israel, since 1994. Declaration of Uri Mahlab dated _____, ¶ 1 (hereinafter, "Mahlab, ¶ __"). He received the BSc degree in Electrical Engineering (EE) form the Ben Gurion University of the Negev, Beer-Sheva Israel, and the MSc and PhD degrees in Electrical Engineering from the Technion-Israel Institute of Technology, Haifa, Israel, in 1989 and 1992, respectively. Mahlab, ¶ 2. Dr. Mahlab is a senior lecturer in the Holon Academic Institute of Technology (HIT) in Holon, Israel, in the Electrical Engineering department, and he is a member in HIT since 1994. *Id.* Dr. Mahlab has been involved in the industry since 1992; he was employed by ELOP (Electro-Optical Industry in Israel), Tadiran Co. in the field of military communication, and since 1998 he is with ECI TELECOM in the field of optical technologies and networking of the

Networks Solution Division. Mahlab, ¶ 3. He is also the inventor (or co-inventor) of 26 inventions, each filed as a patent application in a number of countries. Mahlab, ¶ 4. Thus, he is very familiar with the technology at issue here, as well as with the patent laws. Applicant submits this declaration in support of the arguments presented herein as discussed below.

The Office Action asserts that Barnsley discloses "a first communication path (citing the optical path between splitter 7 and switch 8) extending between at least two network elements (citing splitter 7 and switch 8) and comprising at least one optical link (*e.g.*, the optical link between the output of splitter 7 and the input of optical switch 8) for carrying optical data signals. In Barnsley, the splitter 7 takes a small proportion of the combined incoming signal which comprises data signal 4a and the associated control signal 5a of an incoming packet (coming in on path 2), and feeds it to the filter 14 through the amplifier 15. Col. 4, lines 18-21. Mahlab, ¶ 11. However, the rest of the incoming signal (i.e. the data signal and the control signal travels along the fiber 2 between the splitter 7 and the switch 8. Mahlab, ¶ 12. Thus, Barnsley does not teach the claimed combination as recited in the claim, because the path between 7 and 8 in Barnsley does not carry optical data signals separated from their associated optical addressing signals as recited in the independent claims. Mahlab, ¶ 13.

Further, the points 4, 5, 6, 7, 8, 14 and 15 of Barnsley are not network elements as they would be understood by one of ordinary skill based on Applicant's disclosure. Mahlab, ¶ 14. As discussed in the summary of Applicant's specification,

> the network element in accordance with the present invention is a device provided with routing capabilities, e.g. a router, and the like. For the sake of convenience such a

> network element will be referred to hereinafter as a 'router', but this term should be understood to encompass also any other device having switching and forwarding capabilities.

Mahlab, ¶ 15. Applicant has amended each of the independent claims to provide an explicit basis for this argument in the claim language. In particular, each of the independent claims now recites that the network elements, routing apparatus, and/or routers each have routing capabilities. One of ordinary skill in the art would understand, based on the knowledge of the relevant technology, and from reading the specification, that a router, or a network element having routing capabilities, means a device having switching and forwarding capabilities. Mahlab, ¶ 16.

In contrast, points 4, 5, 6, 7, 14, and 15 and the light source and modulator in Barnsley, do not having routing capabilities. Furthermore, as known in the art, such devices do not possess switching and forwarding capabilities. Mahlab, ¶ 17. Point 4 is an optical data generator and point 5 is a header generator. Mahlab, ¶ 18. Barnsley states:

> The optical data generator 4 produces data packets . . . by modulating a laser. . . . The header generator 5 produces header (control) signals . . . by modulating a second laser . . .

Mahlab, ¶19. There is no disclosure that generators 4 and 5 have routing, *i.e.,* switching and forwarding, capabilities. *Id.*

Point 6 is a WDM coupler. Newton's Telecom Dictionary, 20th edition (2004) defines "coupler" as "an optical device that combines or splits power from optical fibers." One of ordinary skill in the art would understand that couplers do not have routing capabilities. Mahlab, ¶ 21. **GIL – I have ordered the new edition, as I can't find my old one. I will have one of them to submit with the response.**

Point 7 is a splitter, 14 is a band-pass filter, and 15 is an optical amplifier. Barnsley states that "splitter 7 demultiplexes a small proportion (typically a few percent) of the control signal 5a of an incoming packet and feeds this tapped signal to a band-pass filter 14 via a 1.3 μm optical amplifier 15." Col. 4, lines 18-21. One of ordinary skill in the art would thus understand that splitter 7, filter 14, and amplifier 15 do not have routing, *i.e.,* switching and forwarding, capabilities. Mahlab, ¶ 22.

The Office Action also asserts that the light source and modulator correspond to the claimed network elements. As noted above, the claims now recite that each of the plurality of different network elements have routing capabilities. One of ordinary skill in the art would understand that light sources and modulators do not have routing, *i.e.,* switching and forwarding, capabilities. Thus, they do not meet the claimed limitations. Mahlab, ¶ 23.

The node 1 described in Barnsley arguably has routing capabilities. However, Barnsley does not disclose two different communication paths between two nodes 1 or between the switch 8 and a node 1. Mahlab, ¶ 24.

During the interview in December 2007, the Examiner explained his position that the claimed "first communication path" extends between optical data generator 4, and coupler 6, and the "second communication path" extends between control filter 14 and switch 8. Then, according to the Examiner, the line between data generator 4 (allegedly a network element) and between coupler 6 carries only data signals, so that meets the claimed "a first communication path . . . comprising at least one optical link (line 4-6) for carrying optical data signals separated from optical addressing signals". Further, the Examiner explained that in

his opinion, the line between control filter 14 and switch 8 carries only addressing signals, so that meets the claims "a second communication path . . . comprising one or more optical links for carrying optical addressing signals separated from said optical data signals."

Applicant has amended claim 45 to distinguish the claimed invention over this interpretation. In particular, claim 45 now makes clear that the first communication path comprises at least one optical fiber extending between at least two network elements of the telecommunication system for carrying optical data signals separated from their associated optical addressing signals, and a second communication path comprising one or more optical fibers extending between at least two network elements of the telecommunication system for carrying optical addressing signals separated from their associated optical data signals, wherein each of the network elements have routing capabilities. Further, according to the claimed method, at least one of the at least one optical fiber comprised in the first communication path for carrying the optical data signals separated from their associated optical addressing signals is different from any of the one or more optical fibers comprised in the second communication path. Finally, the optical data signals conveyed separately from the optical addressing signals along the at least one optical fiber were generated at a plurality of different network elements, each of the plurality of different network elements having routing capabilities. Mahlab, ¶ 29.

One of ordinary skill in the art would understand that there is no suggestion in Barnsley how to carry optical data signals separated from their associated addressing signals between such at least two network elements of the telecommunication system, where each of the at least two network elements have

routing, *i.e.,* switching and forwarding, capabilities. Mahlab, ¶ 30. Thus, Barnsley does not teach Applicant's claimed invention arranged as recited in claim 45. Mahlab, ¶ 31.

Furthermore, according to Barnsley, the system disclosed includes "means for multiplexing the data and control signals onto the transmission line in such a manner that the duration of the control signal is at least equal to the duration of the data signal … to ensure that the control signal completely overlaps the data signal on arrival at the second node " (col. 1, lines 59-66) and also "As the control signal overlaps the data signal, the two signals occupy the same time slot" (col. 2, lines 3-4). Mahlab, ¶ 32.

Thus, one of ordinary skill in the art would understand from the disclosure of Barnsley that the both data and control signals must arrive together to the next node. Mahlab, ¶33. Moreover, one of ordinary skill in the art would understand that the operation of the whole Barnsley system relies and is based upon the fact that both data and control signals arrive together. "The header generator 5 produces header (control) signals… by modulating a second laser … so that the laser of the header generator 5 is turned on at, or just before, the start of the data packet… the header generator 5 is tunable so as to provide control signals at different wavelengths, each of which matches the receive wavelength of another network node" (col. 3, line 60 - col. 4, line 5). Mahlab, ¶ 34.

In other words, for the Barnsley system to route a packet, the packet must contain the addressing signal. Therefore, if at all, Barnsley must be considered as teaching away from the present invention. Because unlike Barnsley, which needs to have both the addressing signals and the data arriving at the network element

together in order to ensure that the network element has the control signal required to send the data to the next network element, the present invention is designed so that the control signals and the data travel at least part of their respective paths, separately. Mahlab, ¶ 35.

There is no explicit indication, nor any implicit suggestion provided by Barnsley, to transmit the data and control signals along different paths between two nodes or routers in the system, because Barnsley does not do so, and in fact, teaches away from doing so. Mahlab, ¶ 36.

As discussed above, claims 45, 46, 66, 82 and 86 have been amended to explicitly distinguish the claimed subject matter from the teachings of Barnsley. For the reasons discussed above, Applicant respectfully submits that Barnsley does not teach or suggest there are different optical fibers for carrying optical data signals separate from the optical addressing signals and optical fibers for carrying the optical addressing signals separate from the optical data signals. For at least these reasons, Applicant respectfully submits that the independent claims 45, 46, 66, 82, and 86 are patentable over the prior art of record.

35 U.S.C. § 103

Claims 48-52, 54, 59, 67-71, 73, and 84 were rejected under 35 U.S.C. § 103 as being unpatentable over Barnsley and Nir (U.S. Patent No. 6,160,653). The rejections of the remaining claims are respectfully traversed for the following reasons. Applicant respectfully submits that the dependent claims, depending from each of the independent claims respectfully, are patentable in and of themselves and as they depend from and include the recitations of the independent claims from which they depend for the reasons discussed above.

Conclusion

In view of the above amendments and remarks, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections of record. Applicant submits that the application is in condition for allowance. Early notice to this effect is most earnestly solicited.

If the Examiner has any questions, or is inclined not to withdraw the outstanding rejections, he is invited to contact the undersigned at 202-628-5197, to advance prosecution.

Respectfully submitted,

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